Massachusetts

2010 State Profile

The New England electric grid is an 8,000-mile high-voltage transmission system that connects electric utilities, publicly-owned electric companies, power generators, suppliers, alternative resources and end users in the six-state wholesale electricity marketplace. This is a brief profile of the electric grid and wholesale markets serving Massachusetts based on information from New England's regional system planning process and wholesale market reports.

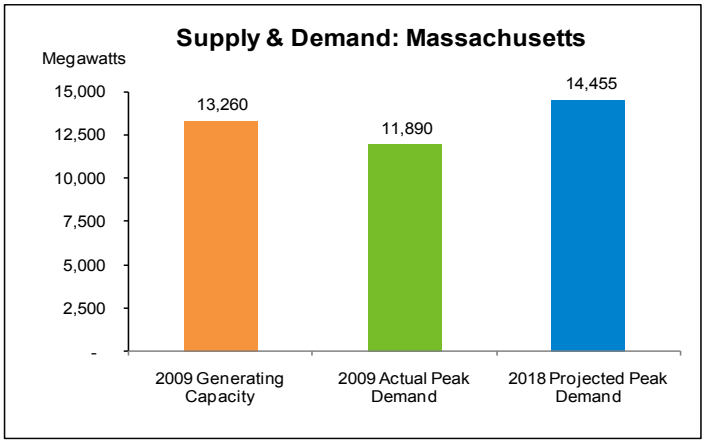
Introduction

Massachusetts represents approximately 45% of the population in New England and 46% of the region's total electricity consumption. The Greater Boston area, which includes the North Shore, represents nearly half of the state's electricity use.

The state relies on both in-state resources and imports of power over the region's transmission system to serve electricity customers. Transmission, generation and demand resources are being added to the system to ensure that the reliability of the system is maintained. Demand resources (DR) are customer efforts to reduce electricity consumption through conservation and energy efficiency (EE). DR is treated as a resource in New England's wholesale electricity markets. ●●●

Growth in Demand

In the *2009 Regional System Plan*, ISO New England (ISO) forecasts the state's overall electricity demand to grow at a rate of 1.2% annually over the next decade, slightly above the 0.9% rate projected for New England. The ISO forecasts the state's peak (summer) demand to grow 1.3% annually over the next decade, slightly above the 1.2% rate projected for the region.



Updating the forecast: The ISO issues a new 10-year forecast each year based on the latest economic data. The 2009 forecast shows that New England's demand for electricity fell in 2008 compared with 2007, and future demand growth is expected to slow as a result of current economic conditions.

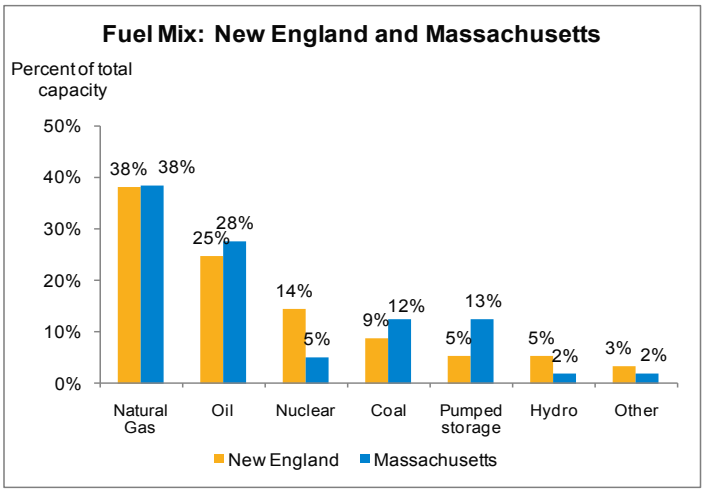
Massachusetts has been proactive in developing programs and initiatives to promote EE and reduce the growth in electricity use, such as Governor Patrick's goal to achieve zero load growth and the 2008 *Green Communities Act's* goals for EE and DR. The Act sets goals of meeting at least 25% of the state's electricity needs with demand resources by 2020, and reducing total energy consumption by at least 10% by 2017. ●●●

Generating Resources

The total capacity of generating plants in Massachusetts is approximately 13,300 megawatts (MW). This is 42% of the total for New England. Generator availability has increased systemwide in New England since the start of competitive markets, from 81% in 1999 to 86% in 2008. At any given time, however, individual generators may not operate due to planned or unexpected outages, environmental restrictions, or other reasons. Some resources do not operate because their offers to sell electricity in the wholesale market are above the market-clearing price. In Massachusetts, generators are owned and operated by private generation companies and municipal utilities. ●●●

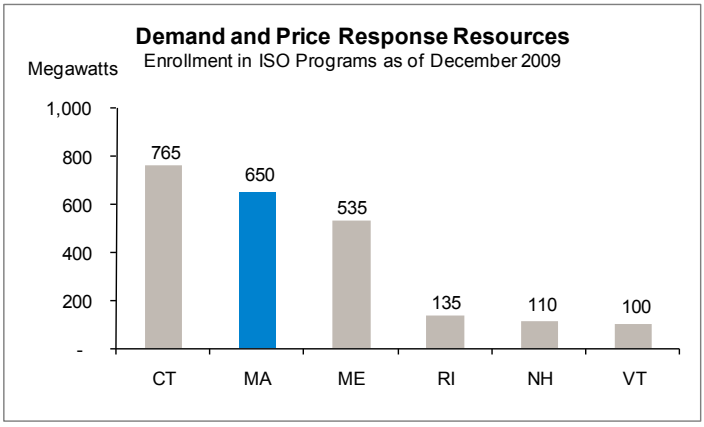
Fuel Mix

Natural gas and oil are the primary fuels for more than 60% of the existing generating capacity in the state and region. ●●●



Demand & Price Response

There are approximately 2,300 MW of demand resources in New England that can reduce electricity consumption when there is a shortage of operating reserves on the electric grid or in response to high wholesale prices. There are more than 600 MW of DR in Massachusetts. DR has grown substantially since the start of competitive markets and continues to grow with efforts to integrate it into the wholesale electricity markets. ●●●



Proposals for New Resources

In New England, the Forward Capacity Market (FCM) provides opportunities for existing and new generation (supply), DR, and imports to compete to provide the capacity resources the region needs to meet future reliability requirements.

Resources must qualify, clear (i.e., be selected) in the auction, and then perform when called by the ISO to be eligible for capacity payments.

The most recent Forward Capacity Auction (FCA-3), conducted in October 2009, procured resources that need to be available June 1, 2012 to May 31, 2013. Approximately 1,500 MW of *new* generation resources from Massachusetts cleared in the auction, representing 90 percent of the new generation cleared in New England. Approximately 150 MW of *new* DR from Massachusetts cleared in the auction, representing about half of the DR cleared in New England. The ISO will conduct the fourth auction (FCA-4) in August 2010, for resources needed in the 2013-2014 timeframe.

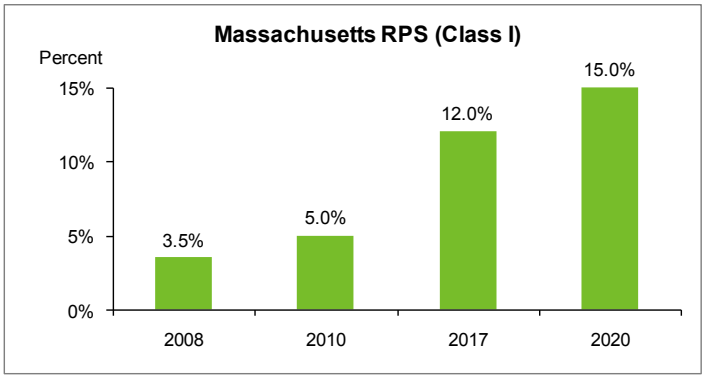
In addition to the wholesale markets, states may provide incentives for the development of certain resources that help achieve their policy goals.

Connecting New Generating Resources

In order to connect to the grid, a proposed generator must be studied and approved under the ISO's Generator Interconnection Procedures to ensure the project will not adversely impact the reliability of the electric grid. This is known as the "queue" process. There are more than 2,600 MW of proposals in Massachusetts, including a large off-shore wind project, that have entered the queue, representing 26% of the proposals in New England as of December 2009. Historically, not all of the proposals in the queue have been developed, but it is an indication of the potential for new resources. ●●●

Renewable Resources

Utilities and competitive suppliers must obtain specified percentages of the electricity they provide to customers from renewable sources to meet Massachusetts's state renewable portfolio standard (RPS). Massachusetts has two classes of renewable resources that include certain types of solar, wind, ocean energy, biomass, hydro, landfill gas, geothermal, and fuel cells. Renewables developed in 1998 or later are Class I; resources developed before 1998 are Class II. The Class-I RPS increases to 15% in 2020.

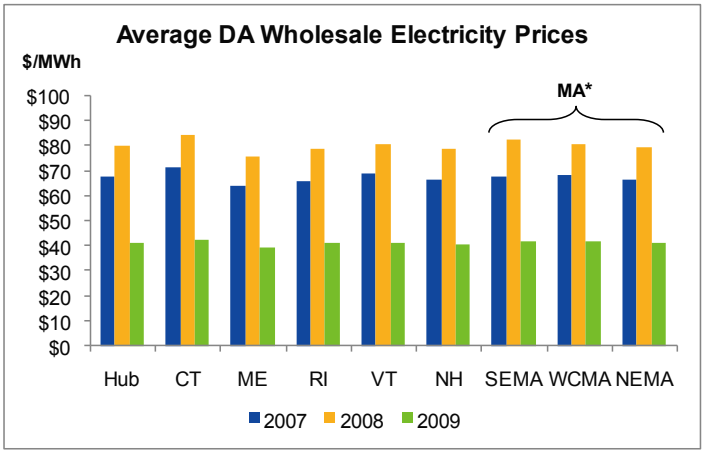


Massachusetts also has an alternative energy portfolio standard that includes innovative energy technologies such as combined heat and power, flywheel energy storage, and coal gasification with carbon capture and sequestration. The *Green Communities Act* set a goal to meet 20% of the state's electricity needs with new renewable and alternative energy generation by 2020. In addition, Governor Patrick has set goals of developing 2,000 MW of wind power in Massachusetts by 2020 and installing 250 MW of solar generation by 2017. ●●●

Wholesale Market Prices

Locational pricing is a key feature of New England's wholesale electricity markets. The ISO administers Day-Ahead (DA) and Real-Time (RT) Energy Markets and calculates prices for eight zones in New England. Except for Massachusetts, each state is a separate zone. Price differences occur between zones when physical transmission constraints limit the ISO's ability to dispatch the lowest-priced resources. This requires the ISO to dispatch higher-priced local generation, resulting in congestion. The ISO calculates an average "Hub" price to show the wholesale price without congestion.

Average DA prices in 2009 were about 50% below average annual prices in 2008, primarily due to reductions in fuel costs.



* Massachusetts has three zones: Southeastern Mass. (SEMA), Western/ Central Mass. (WCMA), and Northeastern Mass./Boston (NEMA/Boston).

The amount of out-of-merit generation needed to protect against contingencies dropped 35% from 2007 to 2008, largely due to transmission upgrades in Connecticut and Boston. ●●●

Transmission

Several major transmission projects developed through the ISO's regional system planning process have been placed in service or are under construction and others are entering the siting process in Massachusetts. Upgrades have been completed in Boston, the North Shore, and southeast Massachusetts and other projects are planned for western Massachusetts. Northeast Utilities (NU) and National Grid are proposing transmission projects to address reliability needs in Massachusetts, Connecticut and Rhode Island. The projects, known as the New England East-West Solution (NEEWS), are designed to improve the ability to move power across New England and strengthen reliability in the Greater Springfield area, Connecticut and Rhode Island. Changes in the forecast of electricity demand or development of market-based responses to system needs can affect the need for transmission projects, and the ISO re-evaluates these needs as part of the planning process. ●●●

About ISO New England

ISO New England is the Independent System Operator responsible for ensuring the reliable operation of the New England electric grid, administration of the region's wholesale electricity markets, and administration of the regional Open Access Transmission Tariff, including regional system planning. The ISO is a not-for-profit corporation governed by an independent Board of Directors. The ISO does not own transmission or generation assets and has no financial interest in any companies participating in the region's wholesale electricity markets. ●●●

Sources and Additional Information

U.S. Census Bureau, *2009 Regional System Plan, 2008 Annual Markets Report*, FCA results, and other public ISO information.

ISO New England: www.iso-ne.com

MA Dept. of Public Utilities and Dept. of Energy Resources: www.mass.gov (State Agencies: Energy & Environmental Affairs)

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